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Occasional Papers

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Number 7

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PEACE STUDIES PROGRAM OCCASIONAL PAPER NO. 7

September 1976

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I. INTRODUCTION

The new "great debate" on strategic deterrence that was anticipated a few years ago has quietly abated.[1] The former Secretary of Defense James R. Schlesinger's announcement of January 10, 1974, that "there has taken place a change in the strategies of the U.S. with regard to the hypothetical employment of central strategic forces" did elicit a flurry of writings denouncing the new strategy, but in very few cases the U.S. need for flexible nuclear options and the options' impact on deterrence were throughly examined.[2] Meanwhile, first under Schlesinger and more recently under Secretary of Defense Donald H. Rumsfeld, the new posture has been adopted and weapons procurement for it is under way. One reason for the relative calm might be that as an issue strategic weapons have exhausted their appeal: the public has learned to live with the threat of nuclear annihilation, and arms control analysts perhaps feel that they have heard the same arguments once too often. Or it might be that security issues have been pushed to the background by other international concerns: détente between the U.S. and the Soviet Union and rapprochement between the U.S. and China have muted traditional debates over U.S. national security, and among international relations experts the sandbox of the strategist is being replaced by the pocket-calculator of the economist. It might also be that at least for the general public the arms debates are getting just

a little too complicated: it is relatively easy to take a stand on the ABM and one could have strong opinions about SALT, but what is one to think about the significance of the change from MIRV to MARV, or, as in the case to be examined here, from the doctrine of mutual assured destruction to flexible nuclear options?

Some analysts have argued that unconscious "forgetting about the unthinkable" might not be so harmful after all. If the public is no longer concerned about or frightened by CEPs or throw-weight gaps or counterforce targeting, this might make nuclear threats less potent and, consequently, nuclear weapons less important. It has been persuasively maintained that in the case of nuclear proliferation, a certain amount of public tedium with the issue has actually helped to dampen the interest of potential "nth countries" to go nuclear.[3] But this is unfortunately not the only possible consequence. With arms control analysts bored with the subject and the public indifferent or ignorant about the issues, a public debate on defense policies will be lacking, and the policies may become more irresponsible. At the very least, at stake are decisions on the direction of research and development and the quality and quantity of weapons; and on the perhaps more important level, the decisions will determine how the acquired weapons will be used if a war ever breaks out.

This paper argues that the case for flexible options should be carefully reassessed. The perceived need for options

grew out of disenchantments with the assured destruction doctrine. Criticisms of that doctrine were already spelled out in strategic debates in the beginning of the 1960's, but the growth of the Soviet strategic arsenal brought them new urgency. The doctrine--an ability to absorb an opponent's massive nuclear strike and in a riposte to annihilate a certain percentage of his population and his industrial potential[4]--was alleged to be incredible, irrational, and immoral. Incredible, because with the Soviet strategic arsenal capable of an assured retaliation the threat to inflict massive punishment on Soviet society for less than an all-out attack on American heartland is hardly believable; irrational, because it provides no answer to nuclear war breaking out by accident, miscalculation, or madness; and immoral, because against the time-honored principles of warfare, assured destruction deterrence stems from the threat to mass-slaughter civilian hostages.

To regain its credibility, Schlesinger argued, strategic deterrence "must rest on many options and on a spectrum of capabilities to support these options."[5] He found it disturbing that in the face of provocations, either nuclear or non-nuclear, a U.S. President would be left with the choice of either striking massively or doing nothing. If, instead of having that stark choice, he could tailor the U.S. response to meet the aggression, deterrence would be enhanced. In terms of specific strategic targets this meant that in addition to Soviet cities and missile sites, the new targets would include 'point' targets that would damage the Soviet war-fighting capability--

such as airfields, submarine bases, dams, oil fields, and rail marshalling yards. It also meant that some characteristics of the U.S. weapons systems had to be improved: only after revamping targeting plans, revising command and control procedures, and improving weapons, selective counterforce strikes could be dispensed.

These changes, according to Schlesinger, would reinforce deterrence in two ways. First, if the U.S. had the capability for flexible options, the possible enemy might be dissuaded from threatening or initiating aggression, since he could no longer act with impunity. Secondly, in a nuclear war--deterrence might still fail in spite of all precautions--damage could be limited if only relatively small strikes were exchanged. In sum, Schlesinger's proposal would provide U.S. decision-makers a chance for "a series of measured responses to aggression which bear some relation to the provocation, have prospects of terminating hostilities before general war breaks out, and leave some possibility for restoring deterrence."[6]

Why should we be concerned about the Schlesinger doctrine? After all, his criticism of mutual assured destruction followed long-established arguments. Since the early 1960's the ethical dilemma of nuclear force has been frequently singled out, and the holding of innocent noncombatants as hostages has been abhorred by several authors.[7] Also, it has been argued that the credibility of deterrence has decreased, since the promise of a mutual suicide as a response to an opponent's minor probe

would probably be met with incredulity, and since uncertainties involved in conveying a deterrence commitment and calculating values the opponent puts on a disputed objective make it impossible to formulate anything but the crudest measure for weighing different policy options.[8] Neither was the proposal for the acquisition of a counterforce capability unprecedented. During the Eisenhower administration, the Air Force staunchly supported counterforce programs to supplement the massive retaliation doctrine, and ever since the McNamara initiative of June 1962 stating that for the United States "principal military objectives, in the event of a nuclear war stemming from a major attack on the Alliance, should be the destruction of the enemy's military forces, not of his civilian population,"[9] the concept of counterforce has been debated and redebated. The Nixon administration already early leaned toward flexible options.[10] In academic journals proposals for more flexibility and counterforce capabilities were put forward.[11] In an eloquent appeal, Fred C. Ikle, Director of the U.S. Arms Control and Disarmament Agency, called for a strategy of threatening destruction to the "military, industrial, and transportation assets--the sinews and muscles of the regime initiating war."[12]

The central concern over the flexible options strategy does not arise from Schlesinger's criticism of the assured destruction doctrine, but rather from the fact that several crucial problems with the new policy were slighted. In the following pages, two of the problems will be examined. First,

it was asserted by Secretary Schlesinger that aside from improvements in targeting plans and command, control and communications procedures, few if any new weapons were needed to support the options. It will be argued here, however, that as a built-in feature of the strategy, pressures for new weapons systems and qualitative improvements of the old ones will be increased, and that as a consequence, arms control problems will be further aggravated.

The second problem can be molded into a simple question: do flexible options strengthen deterrence? The fundamental assumption in this paper is that the rationale for any nuclear strategy and concomitant military posture must be deterrence. If flexible options enhance deterrence by making U.S. response credible in all possible contingencies--thus improving the deterrent value of an assured destruction posture--there is good reason to maintain that the strategy is desirable. If, on the other hand, they tend to undermine deterrence, the strategy should never become an official U.S. national policy. The main contention derived from the analysis of this paper is that flexible nuclear options fail to significantly improve the existing situation, and in fact at times might serve to erode deterrence.

II. FLEXIBLE OPTIONS AND ARMS CONTROL

After Schlesinger's initial announcement of the new strategy, much of the discussion was side-tracked on the question of whether or not the proposed changes were novel,

and the more urgent question of what impact flexible options were going to have on arms control received little attention. This emphasis reflected official pronouncements. Flexible options were heralded by Schlesinger as "probably the greatest change in U.S. nuclear missile strategy in a decade."[13] His initial remarks clearly indicated that in ordering strategic strikes the U.S. President had very little leeway. He alleged that the U.S. had targeted "Soviet cities initially and massively" and that this was "the principal option that the President of the United States or the National Command Authorities would have in the event of a possible recourse to strategic weapons."[14] Critics of flexible options, on the other hand, contended that U.S. strategic forces have had a counterforce capability and targeting plans have been counterforce to some extent at least since the late 1950's, and that only a small fraction of the targets contained in the strategic target plans are cities and other 'counter-value' targets.[15]

Upon examination, it is evident that the United States had possessed a capability for counterforce options for a long time. This becomes obvious when we compare the number of relevant targets in the Soviet Union to the number of available U.S. warheads. The Soviet population is quite highly concentrated. Despite the enormous dimensions of the country, the majority of the population lives in less than a quarter of the country's total area. Of the Soviet urban population, which amounts to 56% of the total population, in

1970 approximately 70% was located west of the Urals. What is even more significant, almost 85 million people, or about 35% of the total Soviet population, resided in 310 cities of 50,000 people or more. Furthermore, according to recent estimates, over 60% of Soviet industrial capacity is located in the top 300 cities.[16] If our intention is primarily to inflict "unacceptable damage" on the Soviet society--unacceptable damage is the conventional measure for assured destruction and is calculated to be the destruction of between a quarter and a fifth of the Soviet population and between two-thirds and a half of the Soviet industrial capacity[17]--we can, therefore, confine ourselves to a relatively limited set of targets. According to a widely accepted estimate, for "unacceptable damage" somewhere around 400 megaton-equivalents are needed.[18] As early as in 1968, Secretary of Defense McNamara calculated that only either 440 Minuteman III ICBMs (1320 warheads) or 340 Poseidon SLBMs (3400 warheads) would be needed to inflict that amount of damage on Soviet society. In comparison, at the moment the United States is capable of launching roughly about 3600 megaton-equivalents in the approximately 3000 warheads in its ICBM force and 4500 warheads in submarines.[19] These figures still exclude more than 400 B-52 bombers capable of carrying several megaton-range warheads each, and medium-range missiles and fighter bombers situated in aircraft carriers and overseas bases around the perimeter of the Soviet Union and its allies. Even these rough indicators

of U.S. strategic capability clearly demonstrate that a huge number of warheads and megatonnage is left over for counterforce targets after the force criteria for assured destruction have been fulfilled.[20]

Of course, targeting plans had always included military targets.[21] When testifying before Congress, Secretary Schlesinger himself modified his initial pronouncements and conceded that a massive countervalue attack was not the only option available. In his testimony he pointed out that "this [pure countervalue attacks] is not the way the forces were targeted, but the overt public doctrine stressed only going against cities."[22] On several occasions he stated that the strategic plans always included both several contingency options and military targets. For example, in his FY 1975 Defense Report he emphasized that "several targeting options, including military only and military plus urban/industrial variations, have been a part of U.S. strategic doctrine for quite some time."[23]

Was Schlesinger's announcement then only designed to exaggerate the alleged inadequacies of the U.S. strategic weapons systems in order to sell the flexible options doctrine to the public? It seems indeed fair to assert that Schlesinger's initial remarks were meant to be alarmist, but the fact also remains that in real terms Schlesinger introduced some significant modifications. The main change took place in the Single Integrated Operations Plan (SIOP) which is the master plan for U.S. nuclear weapons targeting. The new SIOP offers a

crucial degree of selectiveness and flexibility for a decision-maker. Under the old targeting plans dating from 1961-62,[24] he had recourse to only a limited number of relatively large options. He could order a "withhold," i.e., he could keep a portion of the missiles from going against designated targets and reserve it for later use. However, the number of missiles in an attack tended to be large and contingency plans for withholds few. For example, in the late 1960's as much as from two-thirds to three-quarters of the land-based ICBM force would be fired as a response to a crisis deemed by the top decision-makers to warrant the use of nuclear weapons.[25] Under the flexible response SIOP, the number of missiles used would be matched to the preceived needs of the situation, and depending on the exigencies of the situation, their number would range from as few as one or two to several thousand. Options would be "packaged" in anticipation of crises, and thus decision-making would be considerably faster and easier.[26]

Another emphasis of the Schlesinger plans that differentiates them from earlier ones is that now U.S. strategic forces are seen as an integral part of an interdependent triad of forces--conventional, theater nuclear, and strategic--and they are planned to be used to supplement the other two. In other words, strategic forces--especially the Minuteman III ICBM force, due to its favorable characteristics from the point of view of command and control--

are now envisioned by U.S. strategic planners to perform some of the tasks that were before assigned to tactical theater forces, e.g., to hit a military barrack or an airfield in Eastern Europe or western Soviet Union, and they will be coordinated more closely than before with tactical and conventional military planning.[27]

The crucial question now, from the point of view of arms control, is the following: can the missions designed for U.S. strategic forces in the revised targeting plan be performed with the existing arsenal of weapons or are new weapons systems needed? Secretary Schlesinger went to great pains to separate the issue of flexibility from that of "sizing." He emphatically argued that "the evolution in targeting doctrine is quite separable from, and need not affect the sizing of the strategic forces."[28] In his testimony to Congress he pointed out that accuracy indeed contributes somewhat to the effectiveness of the new doctrine, but "we do not have to acquire a single additional weapon."[29] He went on to claim that the only thing the U.S. needs is improved planning, which can be done with low cost, and improved command, control, and communications.

Regardless of Schlesinger's pronouncements to the contrary, a credible flexible options strategy does require, if not totally new weapons programs, at least considerable modifications and improvements of the old ones. In the Fiscal Year 1975 about $300 million was allocated for the

costs of the new targeting doctrine, of which amount roughly $100 million was used on improving command, control, and communications.[30] Much of that sum was used for improving the capabilities of Minuteman III for retargeting. The new Command Data Buffer System (CDBS) will allow each of the Minuteman III missiles to be retargeted in some 36 minutes (as compared to an earlier procedure of 16 to 24 hours) and the entire Minuteman force in less than 10 hours.[31] This improvement, along with better reconnaissance for post-attack mission assessment, enhances the possibilities to "shoot-look-shoot"--to identify missiles that have failed in their mission and to reprogram other missiles to take their place--and hence improves flexibility of the Minuteman system.

Improved command, control, and communications systems by themselves can hardly be seen as anything else but commendable. What should be a matter of concern, however, is the existence of parallel programs to upgrade accuracy and yields of U.S. weapons systems. To perform the tasks designed in the revised SIOP, missile warheads will have to be extremely accurate. The most accurate missile until now in American inventory has been Minuteman III, whose circular error probable (CEP) is approximately 1300 feet. This accuracy is enough for large soft targets and gives the Minuteman warhead a fairly good silo killing capability, but it is too crude for the kinds of pinpoint attacks planned for in the new options. The U.S. is already pursuing a host of programs

to reduce missile CEP. Development of the Advanced Inertial Reference Sphere (AIRS) to reduce the cumulative navigational errors could improve the CEP of a Minuteman warhead to 700 feet. With the introduction of terminal guidance systems and improved stellar navigation aids the CEP can be further reduced, to the point where CEPs of less than 100 feet are possible.[32]

Concomitant with improvements in accuracy, there are programs under way for increasing hard target capabilities of the U.S. forces. In these programs, the greatest emphasis has been put on qualitative improvements of the ICBMs. The present MK 12 warhead fitted in Minuteman III missiles has proved to have only a limited capability against hardened military targets. Assuming perfect reliability, it is calculated to have a less than 0.25 probability of kill against a silo hardened to 1000 psi, and against a 300 psi silo the probability increases only to 0.45. It is obvious that too many warheads would have to be expended for each silo to achieve a high probability of kill. That would be not only expensive, but the "fratricide effects" might make it hard to destroy the silos.[33] A new warhead, designated MK 12A, will be fitted in the Minuteman III missiles in the late 1970's, and it will have a yield approximately twice that of the old Minuteman warhead of 170 KT. The significance of this improvement, coupled with the expected reductions in CEPs mentioned earlier, can be seen clearly if the kill probabilities of the current and projected Minuteman missiles

are compared: where the current warhead has a kill probality of less than 0.25 against a 1000 psi silo, the MK 12A warhead with improved accuracy is expected to have a 0.9 probability of knocking out a similar silo.[34]

Several other programs are improving the ICBM capabilities. Under the Upgraded Silo Program, silos are redesigned to survive blast overpressures and to resist the electromagnetic pulse created by nuclear explosions; "cold launching" the missiles wlll provide for an increase of about 15% in the usable diameter of a silo and make it possible to retrofit bigger launchers in the current silos.[35] An especially interesting program is Project Pave Pepper. In FY 1976 Defense Report Schlesinger described the flight-testing of two Minuteman III missiles, each with several smaller re-entry vehicles which "would give the U.S. the option to expand the target coverage of the Minuteman force without any increase in the number of missiles deployed."[36] The additional capacity of warheads would be useful in performing several of the flexible options' missions. They would serve "as a hedge against large losses in the Minuteman force, as a means of increasing our coverage of relatively soft-point targets of value that are not collocated with population, for suppression of expanded Soviet defenses, and as a hedge against unexpected failures in the bomber or SLBM forces."[37] Finally, it should be emphasized that all these improvements have been launched under the protective umbrella of the SALT

agreements. Since the SALT I agreement merely places numerical restrictions on the "legs" of the strategic Triad, and even if the Vladivostok agreements are formalized in a treaty, qualitative improvements can proceed unimpeded. The Vladivostok understandings only provide a ceiling of 2400 ICBMs, SLBMs and strategic bombers, of which a maximum of 1320 can be MIRVed, but make no attempt to check technological improvements on the existing weapons systems.

As we can see, the focus of arms control has shifted away from quantitative issues to the issues of technological refinements: improvements in silo capabilities, innovations in guidance technology, increases in the number of MIRVed warheads in a single missile. Under these circumstances, what are realistic prospects for qualitative arms limitations? First of all, a prospective arms control agreement will have to overcome a strong opposition formed by various bureaucratic and organizational interests. A possibility of exploiting novel technology will bring about a coalition of the military, scientists researching in weapons laboratories, and defense contractors. The military and the scientists, at minimum, want to protect their professional prerogatives by attempting to minimize the risk of being caught by surprise by Soviet developments in weapons technology. This has been clearly manifested in the case of the Test Ban Treaty negotiations. In 1963, the Joint Chiefs of Staff saw it vital to their interests to specifically secure "the maintenance of modern nuclear laboratory facilities and programs in theoretical

and exploratory nuclear technology which will attract, retain and insure the continued application of our human scientific resources to those programs on which continued progress in nuclear technology depends"[38] before they gave their consent to the Limited Test Ban Treaty; and in regard to the recent Threshold Test Ban Treaty, it has been pointedly argued that "under the 150 KT limit, the U.S. can still develop advanced penetrators as well as improved strategic and tactical warheads designed for lower collateral damage."[39] Therefore, whether the coalition is glued together by the "sweetness" of new technology,[40] the organizational health imperative,[41] or the irresistible drive of bureaucratic process and procedures,[42] the resulting alliance is a strong one, and qualitative arms control efforts will become extemely complex and difficult. Furthermore, any agreement reached would pose almost insurmountable difficulties from the viewpoint of verification. A quantitative agreement like the SALT I is relatively simple to monitor by sophisticated satellite reconnaissance, but a qualitative agreement would not lend itself to easy verification. Tracking down qualitative improvements in delivery vehicles and warheads would necessarily mean on-site inspection--and that is the requirement on which international agreements have traditionally foundered--but even close inspection might do little good: real operational capabilities of weapons systems could be

simply altered by substituting a more primitive version of a component for the inspectors and then replacing it with the more advanced technology when the inspectors are gone. Verification will, therefore, again emerge as a likely stumbling-block for any agreement attempting to stem qualitative improvements.

Aside from vested bureaucratic interests and verification problems, certain characteristic features of the new technologies will make the prospects for limitations especially dim.[43] First, arms control advocates in Congress and in the public at large are confronted by weapons programs that are little publicized and relatively inexpensive. Public interest was aroused by programs like the ABM, B-1 and Trident systems, for they were highly visible, completely new weapons, with costs soaring to billions of dollars. In contrast, AIRS, MK 12A, and Pave Pepper--while immensely important for the credibility of flexible options--are virtually unknown to the public, and burdened with only a fraction of the costs of the former systems. For example, for Fiscal Year 1977, Secretary Rumsfeld requested $472 million for all Minuteman improvement programs. Of that amount, the vast majority ($367 million) was earmarked for the silo upgrade program, and only as little as $49 million and $37 million was requested, respectively, for accuracy improvements and for the development of the MK 12A warhead.[44] In the case of Pave Pepper, the previously provided $18 million and the $2 million allocated in Fiscal Year 1976 were adequate to complete the

program.[45] In comparison, a single B-1 strategic bomber carries a price tag of $84 million, and a commonly quoted estimate for the research and development and the deployment of the first group of ten Trident submarines is $15 billion dollars.[46] It is obvious from these figures that the new technologies cannot be curtailed by attacking the perennial wastefulness of the Pentagon, and it will be difficult for arms control advocates to garner enough support to stop such innocuous and inexpensive programs.

Secondly, the nature of technological innovation process will make it progressively more difficult to halt arms procurement. Developing an operational technology is a long and arduous road, and weapons are produced only after a lengthy "incubation" period of research, design, and experiments. For example, recent studies on MIRV have demonstrated that the development of MIRV took a decade, and, perhaps even more interestingly, that it is impossible to determine the exact moment of MIRV's conception. The actual deployment decision was just a culmination of a long process of technical possibilities, political choices, and alliances of organizational interests.[47] In the case of improvements for flexible options, Schlesinger has aptly illustrated the difficulty of trying to pinpoint their origins. "There is no single point in time at which such a decision can be described as having taken place," was his reply to an inquiry on when the decision was made to improve the accuracy of U.S. strategic weapons.[48]

Finally, even if there were Congressional cutbacks on the funding of some of the programs, it would be hard to keep some crucial refinements like improvements in accuracy from being incorporated into the weapons systems. Often these improvements involve technologies that are direct spin-offs from civilian research: microelectronics, computer technology, advanced measurement of the earth's gravitational field. Or at times military technologies might have useful civilian applications. For example, the same satellite navigation system that would guide a warhead within 30 feet from its target, can be used to help ships determine their location with the accuracy of 30 feet.[49] The military and civilian applications of advanced technology are, therefore, so intertwined that it would be a hopeless task to attempt to separate the two.

All this raises the inevitable question: was the flexible options policy unavoidable and Schlesinger merely expediting the obvious? As we have seen, a good case can be made for an affirmative answer. Advanced technologies were available and at least partly already creeping into programs, and especially after the Air Force and the Navy had started to see eye to eye on the desirability of counterforce,[50] pressures from bureaucracies were mounting. Yet, it would be a mistake to see Schlesinger as merely enmeshed in an irresistible web of technological imperatives and bureaucratic interests. All along he and the most influential members of the Nixon administration, including Kissinger and Nixon himself,

supported the proponents of flexible options.[51] He shared with them the fear that the Soviets with their new generation of more accurate ICBMs would threaten the U.S. land-based missiles. It was his conviction that the numerical inferiority in delivery vehicles after SALT I should be compensated by U.S. technological advantage, and that the advantage should be played to the hilt. Also, it was his concern that the Soviets might be tempted to wrest political concessions from the United States if the United States were not able to respond with strategic flexibility. It would probably be naive to maintain that had Schlesinger come out strongly against flexible options the genie could have been coaxed back into the bottle. The technologies would have probably found their way to weapons systems sooner or later. But had he done so, and used the prerogatives of his office--the stuff that bureaucratic politics is supposed to be made of[52]--for a staunch support of the proponents of assured destruction, he would have kept the lid on Pandora's box a little longer, and provided at least a chance for arms control measures.

In conclusion, flexible options policy gives a virtual carte blanche for qualitative weapons improvements, and makes arms control more and more difficult.[53] The criteria for assured destruction at least provided some answers to the question of "how much is enough," but with flexible options policy, there is no logical point of halting weapons refinements. Improved accuracies and yields are soon feared to

make land-based forces vulnerable. This is especially alarming for the Soviets, for in spite of their rapidly improving sea-based deterrent, most of their strategic forces are still land-based. A fear of first-strike might increase incentives to develop systems like the cruise missile and air or land-mobile ICBMs. What the new developments will be like, is still a matter of conjecture, but in any case, as a result of the adoption of flexible options strategy, there is pressure for more and more diversified and sophisticated weapons systems that might have been avoided, had the strategy not been espoused as the official U.S. policy.

III. FLEXIBLE OPTIONS AND DETERRENCE

The second, and perhaps the most important, concern is to determine what impact flexible options will have on strategic deterrence. As we have seen, the planned changes in the SIOP and the improvements in weapons systems do broaden the range of U.S. strategic forces. It might well be argued that if these changes increase flexibility and strengthen deterrence, this will offset their negative effect on the prospects for arms control. We already concluded that flexibility will be increased. The crucial question, then, is to consider whether or not the adoption of the changes will improve deterrence.

Any proposal for a change in nuclear strategy must meet three criteria.[54] First, if the strategy is implemented,

the prospects that war will be less likely, will have to be enhanced. In other words, the change must not alter deterrence calculations in such a way that incentives for a first-strike will be increased. Yet, in spite of all precautions, a war might still break out. This calls for our second criterion: if the strategy is implemented, the prospects of controlling the level of destructiveness will have to be improved. And finally, if the strategy is implemented, the prospects of controlling escalation will have to be enhanced. It should be noted at the outset that even if these three criteria are analyzed separately here, in practice they are often interdependent.

1. Credibility of Deterrence

Few, if any, of the critics of flexible options would deny the contention that the Soviet acquisition of an assured second-strike capability has seriously eroded the credibility of the American assured destruction threat: it would be hard to maintain that a limited Soviet probe, either nuclear or non-nuclear, would be followed by a massive U.S. revenge strike on Soviet cities, while leaving U.S. population centers exposed to a Soviet counterretaliation. The difference between those who oppose the concept of flexible options and those who stand in their favor, then, boils down to a debate over whether or not different ways of employing nuclear weapons can help strengthen deterrence.[55]

Naturally, there are differences among the critics of the flexible options doctrine, but in general they tend to

see deterrence as deeply rooted in the physical fact of an assured second-strike capability, and therefore hardly amenable to changes either in weapons and doctrines for their employment.[56] Lower level violence is considered possible, but it is maintained that limited conflicts should not disturb the balance at the strategic level. A logical consequence of these assumptions is that nuclear weapons are considered impotent as political tools: mutual fear of a nuclear confrontation keeps nuclear weapons from being used for coercive purposes. New weapons systems are seen as unwelcome disturbances that might fuel arms races and disrupt the balance that has until now prevented an Armageddon. Since an initiation of nuclear war at any level would be considered suicidal, the critics of flexible options suggest that U.S. efforts and resources should be spent on assuring the stability of mutual deterrence by dispersing and concealing the American retaliatory force and improving control over it.[57]

Advocates of the flexible options policy also perceive the main strategic balance as lasting: neither the United States nor the Soviet Union is capable of disarming the other in a first strike, nor are they expected to acquire such a capability in the foreseeable future.[58] But they attach a tremendous weight to political perceptions of strategic balance. Consequently they feel ill at ease about the codification of nuclear parity in the Moscow and Vladivostok agreements. This discomfort is coupled with concern

over the new generation of Soviet missiles. The preponderance of one side, they argue, may become a source of serious miscalculations. Also, lack of resolve by one may be exploited by the other. In these occasions, it is contended, nuclear weapons gain independent political utility and, therefore, flexible employment of weapons becomes a "continuation of politics by nuclear means." And given the strict limitations on the efficacy of massive deterrence, the acquisition and preservation of a flexible options capability constitutes a sine qua non for continued political utility of nuclear weapons.

In what ways do the proponents of the doctrine expect flexible employment of nuclear weapons to bolster deterrence? In FY 1975 Defense Report Secretary Schlesinger argued that "a massive, bolt-out-of-the-blue attack on our strategic forces may well be the worst possible case that could occur, and therefore extremely useful as part of the force sizing process. But it may not be the only, or even the most likely, contingency against which we should design our deterrent;"[59] and the same proposition was put forward by Secretary Rumsfeld two years later.[60] The advent of Soviet-American strategic parity has raised, in their minds, the prospect of two kinds of hypothetical contingencies.[61] First, there is the danger that in a crisis the Soviets might be tempted to utilize their newly-acquired parity for political purposes. To wrest concessions from the U.S. or her allies they could use or threaten to use their nuclear weapons selectively, striking

at counterforce targets with minimal collateral damage while still holding U.S. cities hostage. If the U.S. possessed only weapons ill-suited for flexible strikes, so goes the argument, it would be "self-deterred," and the Soviets could "with relatively low risk attack the interior of the United States."[62] Under these circumstances, by being able to retaliate in kind against Soviet military targets the U.S. would manage to deter the Soviets from contemplating aggression and gaining the political advantages they were after.

The second concern has been raised by the prospect of a Soviet initiated conventional military action or an establishment of Soviet military presence in some strategically important area like Western Europe or the Middle East.[63] With relatively weak conventional forces and with only massive nuclear attack plans available, the argument goes, the U.S. would be in a weak position to deter. If, on the other hand, the U.S. possessed an ability to respond flexibly, she could either deter the aggression by threatening with reprisals, or she could actually carry out the threat if deterrence fails by tailoring a selective response that would unwaveringly signal the U.S. determination to oppose the Soviet move. A limited nuclear response would thus be a way of beckoning one's opponent to the bargaining table, and at the same time a technique of promising more serious repercussions, if the opponent did not come to terms.

Let us now attempt to evaluate whether or not a capability of employing nuclear weapons selectively in the above

contingencies improves deterrence, and to do that, we should take a look at the premises underlying the theory of strategic deterrence. A distinguished strategic analyst has defined deterrence as an effort "to reduce the probability of enemy military attacks, by posing for the enemy a sufficiently likely prospect that he will suffer a net loss or lower net gain than would follow from his not attacking."[64] The potential aggressor, therefore, has to make his decision on whether to attack or not to attack on the basis of the "expectation calculus." That is, he has not only to evaluate how capable the deterror is to carry out the punitive threat but also to estimate the probability of the threatened action being resorted to.[65] Since deterrence is the product of these two calculations, in order to keep the value of the deterrent from declining if the capability is curtailed, the credibility of the threat being carried out has to go up. Alternatively, if the threat becomes less credible, the capability to materialize the threat has to increase. Furthermore, for analytical purposes deterrence can be divided into two stages: deterrence ex ante and deterrence ex post. The former refers to the attempt to persuade the opponent to believe that if he attacked, the promised punishment would be delivered. The latter, on the other hand, conveys the intention to carry out the threat, in case the opponent decides that deterrence ex ante is so low that it can be challenged, and actually chooses to launch an attack.

Analytically, the deterror's position can be illustrated in the following manner.[66] Let us assume a world of two adversaries, A and B, both of whom attach utilities to 'peace'-V_p and U_p; to their own 'first strike'-V_{fs} and U_{fs}; and to their 'second strike'-V_{ss} and U_{ss}. In addition, the adversaries make the following subjective estimations of the probability that their choice of 'peace' will encounter the opponent's choice of 'first strike' during a certain time period:

A's estimate of the probability that B will strike = q

A's estimate of the probability that B will not strike = 1-q

B's estimate of the probability that A will strike = p

B's estimate of the probability that A will not strike = 1-p.

Now, we can calculate the value for deterrence. Under normal circumstances, the utility of peace exceeds the utility of first strike which in turn exceeds the utility of second strike, or $V_p > V_{fs} > V_{ss}$ and $U_p > U_{fs} > U_{ss}$. In other words, one normally prefers peace but if war is imminent it is more advantageous to strike first than to be forced to absorb the consequences of the opponent's first strike. This is especially clear in a nuclear war. Let us now calculate the values that A would have. If A prefers to opt for 'peace,' he will get either the utility for 'peace' (V_p) or he will be attacked in which case he still has the utility of 'second strike' (V_{ss}). A estimates that the probability of B striking is q. Therefore, since he always has an option of striking second, he will get V_{ss} with a probability of q and V_p with a probability of 1-q. A can,

of course, choose to strike first, and since he himself makes the decision, he can make the probability of V_{fs} equivalent to 1. For deterrence to obtain, the value of 'peace' must be higher than the value of 'first strike,' or

$$(1-q)V_p + qV_{ss} > V_{fs}$$

In a similar fashion, we could determine the deterrence value for B, using his utilities and probabilities.

In light of the above discussion we can now compare the assured destruction doctrine with the Schlesinger proposal. When the deterrent credibility of the former is examined, it becomes obvious that whatever power of persuasion the doctrine has, derives from deterrence ex ante. A potential aggressor who probes to find out if the promised deterrent holds, plays with the probability that the punishment postulated by the doctrine will in fact be inflicted. And he knows that if it is delivered, it will be devastating. In our equation, the value for 'second strike,' V_{ss}, is very high, and since it is so high, the probability that one is going to be attacked is low. Of course, as we have already pointed out, with strategic parity the credibility of deterrence ex ante of the assured destruction doctrine has deteriorated: a rational decision-maker would hardly react to a challenge by delivering a blow on cities, leaving his own population to the adversary's mercy. The proponents of the doctrine assert,

however, that the gap between the two types of deterrence can be successfully narrowed by exploiting the opponent's uncertainties: treaties, commitments and "plate-glass windows"--like U.S. conventional troops in Europe--can be used to make the promised punishment more credible, "slippery slopes" and acts of recklessness can be invoked to stir doubts in him.[67] Therefore, even though the credibility of a massive second-strike has decreased, the exploitation of the adversary's uncertainties combined with the possibility of high levels of damage has deprived the adversary of incentives to strike first.

Instead of manipulating the uncertainties of deterrence ex ante, Schlesinger proposes to exploit the certainties of deterrence ex post. In his words, to be credible over the whole gamut of contingencies, "deterrence must rest on many options and a spectrum of capabilities to support these options... and a venturesome opponent must know that we have all of these capabilities."[68] In other words, a potential aggressor has to recognize that the U.S. has the capability to respond in kind, and the resolve to do so.

Let us now look at the contingencies depicted by the former Secretary of Defense and examine what impact the availability of flexible response options has on deterrence. The first of the contingencies describes a situation where the opponent has decided to cash in on his strategic power by threatening to use his accurate and low-yield nuclear weapons unless the U.S. acquiesced to his political demands. For

instance, let us presume that the Soviets have already hit some military targets either in Europe or in the U.S., and a moderate amount of collateral damage to population has been caused. If the U.S. does not bow to the demands and make sufficient concessions, there is an unmistakable promise of more damage to come.

No doubt the availability of flexible options improves deterrence here. Even though a fair amount of damage has been suffered, the fulfillment of the assured destruction ex ante pronouncements does not appear convincing. The threat to hit cities is much less credible than the threat to return the attack in kind. In our analytical equation, the increased credibility of second-strike will thus compensate for the decreased physical punishment promised. It might affect the calculations of the adversary in a positive way by decreasing the value of q, and the aggression will never take place. Or if the adversary miscalculates our determination and attacks, flexible strikes against his counterforce targets can be used in two ways. First, they can be used to deliver punishment at minimum provocation and at minimum initial damage to counter the damage suffered from the opponent's attacks, and secondly, flexible strikes can be used to warn the aggressor of more strikes to come and thereby persuade him to negotiate. However, we should recognize that there are dangers involved even in the use of small-scale responses. It is impossible to objectively determine what constitutes a "fair" response,

and collateral damage will probably be greater than anticipated. Furthermore, a limited nuclear exchange puts a high premium on the coolheadedness of national leaders: popular sentiments might sway them to respond massively. With these caveats in mind, we conclude that in the first contingency the capability for flexible options is desirable: despite the disadvantages, it raises deterrence ex post and at the same time offers at least a partial check on escalation.

In the first contingency, the Soviets are depicted as using or threatening to use their nuclear weapons to initiate a nuclear exchange in order to wrest political concessions from the United States and her allies. The second, and more interesting scenario involves a Soviet conventional thrust into a strategically important area. It is more interesting, because it offers a crucial litmus test for Schlesinger's claims. A Soviet conventional probe into Western Europe does not necessarily need to be a likely contingency, but it seems safe to assert that it is more likely than a premeditated nuclear attack either on the United States or on Europe. Therefore, if the availability of flexible options enhances deterrence, it should be particularly evident in this contingency.

For deterring conventional attacks, flexible options are seen to improve deterrence in two ways. First, it has been maintained that the use of flexible strikes would physically deprive the adversary of his chances to reach

his military objectives. Schlesinger has given one example: "If... one were to go after their oil production capacity... the removal of that capacity would have a crippling effect on the Soviet ability to wage war against Western Europe."[69] The general object, then, would be to hit the adversary's supply lines and troop concentrations, and destroy his airfields, marshalling yards and oil fields to make it excessively costly for him to proceed. It is expected that the adversary will stop, and a status quo ante can be negotiated. Secondly, flexible options are expected to have a psychological effect on an adversary. They are allegedly needed to demonstrate one's determination not to let him venture out with impunity, and also to signal that one is willing to continue to escalate if needed.

It has been correctly pointed out that the ex ante deterrent sanction of the flexible options policy is the lowest officially propounded by a U.S. Secretary of Defense in the post World War era.[70] Since deterrence ultimately depends on convincing our adversary that we are capable of depriving him of his objective or that it will cost him too much to reach it, in a grave crisis the sanction may not deter. In the deterrence equation, a drastic decrease in the value of 'second-strike,' V_{ss}, might actually induce a considerable increase in q, the probability of an attack. The ultimate value of the left side of the equation depends, of course, on our perceptions of how large the changes in V_{ss} and q will be, but it is safe to say that with the amount

of promised punishment going down, there will be increased incentives to make probes. Let us consider a hypothetical situation where another crisis over Berlin, for example, has gravely aggravated Soviet-American relations. NATO and Warsaw Pact troops have been already alerted. Since the ex ante deterrent sanction is relatively low, a determined Soviet leader might calculate that the damage resulting from a U.S. flexible options strike will not be as bad as the continuation of an unfavorable status quo. Besides, in his calculations he can still play with the possibility that he would perform a quick fait accompli, and escape unscathed. Let us further assume that the hawks have prevailed in the Kremlin, and an attack has been launched. The initial Soviet thrust has swept NATO forward defenses aside, and fearing Western European casualties, the U.S. is unwilling to use tactical nuclear weapons. In this situation, how credible is the flexible options deterrence ex post?

It is argued that a few missiles for demonstration would be enough to show U.S. resolve and commitment to Western Europe. Well-placed strikes deep in the enemy territory, aimed at military installations with a minimum amount of collateral damage are thought to be sufficient. But these demonstration strikes might not persuade a determined adversary to halt his advance. Therefore, to make the threat effective and stop the opponent's advance, fairly large strikes will have to be planned. Troops and

their support facilities will have to be destroyed, airfields, bridges and railroads will have to be incapacited. It will be impossible to estimate precisely how many weapons would be needed, but it has been asserted that "because the primary goal is to threaten the enemy with unacceptable costs, even limited options will almost certainly involve more than one or two nuclear weapons and might involve hundreds."[71] Ironically, the promise of perhaps hundreds of weapons does not sound very different from a mutual assured destruction threat. Assuming that the adversary is about to reach his objectives, he might still decide to advance, and the United States would have to decide on further escalation. And that decision will necessarily include the willingness to absorb possible Soviet counterforce strikes with their collateral damage.

The last point raises an excruciating dilemma for U.S. decision-makers. An escalation will conceivably prompt quid pro quo limited strikes on U.S. targets. In that situation, the United States bargaining position would be extremely weak. As compared with the Soviet Union, the U.S. population is much more urbanized and thus more vulnerable. At the time 400 megaton equivalents were calculated to be needed to inflict "unacceptable damage" on the Soviet society, the corresponding figure for the United States was thought to be only 200.[72] In 1970, for example, almost three-quarters of the U.S. population was classified as urban--the respective Soviet figure was 56%--and most of the

population was concentrated in a few metropolitan areas.[73] Furthermore, we should keep in mind that the Soviets are still trailing the United States in warhead accuracies--the Soviet accuracies for land-based missiles are estimated to be around 1600-2300 feet and according to the Pentagon even these figures might be somewhat optimistic[74]--and Soviet warheads carry higher yields than their U.S. counterparts. Therefore, for otherwise equal exchanges these factors alone would make the United States suffer relatively more damage. Finally, to further aggravate the dilemma, U.S. civil defense programs are almost totally neglected. In the Soviet Union, the situation is quite different. The Soviets are deploying extensive civil defense measures with the expenditure of a billion dollars a year--for the fiscal year 1977, the United States is allocating $77 million--and are able to carry out elaborate evacuation plans.[75] For all these reasons, therefore, the United States is hardly in an ideal position to initiate a round of nuclear strikes that might draw nuclear fire upon herself.

In conclusion, there seems to be little that flexible options will do to strengthen deterrence. Understandably, the old assured destruction scenario is growing uncomfortably incredible in Western Europe: a Soviet conventional probe into Western Europe is unlikely to unleash U.S. strategic missiles on Kiev and Leningrad. Also understandably, West Germans in particular are less than enthusiastic about the prospect of a tactical nuclear exchange on German soil.

But there is unfortunately little that the new doctrine will contribute toward allaying European fears. Many of the flexible options targets will be in Eastern Europe, outside the Soviet Union. Therefore, in a hypothetical Soviet move in central Europe the U.S. might willfully avoid hitting Soviet targets in order to create a fire-break and keep some limit to the exchanges. This is particularly attractive in light of what we have just learned about the vulnerability of the U.S. to limited nuclear exchanges. Therefore, in the worst possible case for the Europeans, not only might the Soviets still decide to move on despite U.S. threats, but the heartlands of both the super-powers would be held as sanctuaries, and the demonstrations of resolve would be carried out on European soil.

For the United States, flexible options offer little solace. An adoption of the flexible options strategy to support extended deterrence in Western Europe and other important areas will signal that the U.S. and her allies have an inferior conventional warfighting capability, and that any conventional encroachment by the adversary will risk the possibility of the United States eventually resorting to nuclear weapons. The United States, therefore, has to be able to convey her willingness to bear massive costs if needed. Otherwise, the threat is not credible. And as we just saw, the United States is hardly in a position to make that commitment.

2. Collateral Damage

One of the criteria we set for a change in nuclear strategy called for improved control over the level of destructiveness. The first task of deterrence policies is to prevent war from breaking out. But if that fails, their secondary objective is to limit casualties by providing incentives to cease hostilities. It could well be argued that since deterrence might always fail, it would be preferable to have a posture that would be somewhat less deterring as long as it would keep the number of casualties down to a minimum.

In FY 1977 Defense Report Secretary Rumsfeld confirmed that "we have now acquired the combinations and yield and accuracy that permit long-range delivery systems to strike at a wider range of targets, and to do so with relatively low collateral damage."[76] Indeed, at first sight, flexible options scenarios appear reassuring. Instead of panicky leaders stampeding into spasms of retaliation on cities for a slightest provocation and thereby causing tens of millions of casualties and a virtual obliteration of their societies, rational decision-makers are directing relatively light attacks with surgical precision at carefully selected targets. The credibility of limited attacks, of course, depends on how low the "relatively low collateral damage" is thought to be. Indiscriminate attacks are calculated to cause more than 100 million casualties on each side.[77] Soon after his initial announcement, Schlesinger estimated that flexible options attacks would cause "casualties of 15,000, 20,000, 25,000--

a horrendous event but one far better than the alternative."[78] His critics, on the other hand claimed that it would be impossible to keep the number of casualties within reasonable limits. In any nuclear exchange, the effects not only of blast but also of radiation would kill millions.[79]

The difficulty in assessing casualty estimates stems from the lack of real life references. In theory, it seems plausible to strike at selected targets far from population centers in such a way that the casualties inflicted would remain in the order of tens of thousands. However, to keep the casualties that low, limitations on weather conditions, height of burst, terrain, and employment of weapons are extremely demanding; perhaps too demanding in practice.[80] Very soon after the initial announcement, Schlesinger himself modified his earlier figures. In his Congressional testimony he explained that according to the Department of Defense calculations in a "selective counterforce strike by the Soviet Union--in which the Soviets attack SSBN bases and SAC bases, as well as the ICBM silos--the casualties could be as high as, say 5 or 6 million. In an attack on the ICBMs alone, the casualties would run on the order of a million, and for SAC bases, the casualties would be less than that--on the order of 500,000."[81]

But even after the revision, there are several problems with the Department of Defense numbers. In comparison to the Pentagon estimates, an Arms Control and Disarmament Agency (ACDA) analysis puts possible urban casualties as

high as 50 million for an attack where two 1 megaton warheads arrive at each Minuteman silo.[82] It should be noted that this estimate does not include the SSBN and SAC bases, and omits rural casualties altogether. But even allowing that the ACDA estimate might be overly pessimistic, the huge difference between it and the calculations presented by the Pentagon remains.

The drastic difference in the two calculations is partly explained by the fact that it appears that the Department of Defense has this time based its estimates on the 'best case' assumptions: only one warhead per target, optimum height of burst, August winds, and maximum utilization of civil defense facilities. Any deviation from these stringent assumptions would tend to increase the number of casualties, but the last assumption is particularly puzzling, since, as we noted earlier in this paper, no effective civil defense programs in the U.S. have been designed, let alone deployed. It is difficult to calculate precisely how much fluctuation there would be in casualty estimates if less than ideal conditions obtained, but an illustrative example was offered in the Congressional hearings. In a hypothetical "light" attack on the Whiteman Air Force Base in the vicinity of Kansas City, Missouri, casualties would amount only to a few thousand if the attacker used great accuracy and favorable wind patterns, but if these stringent restrictions were not followed, casualties might skyrocket to one million.[83] It is clear from this example, therefore, that

much of the success of flexible options in actual operations would depend on the opponent's capability of exchanging limited strikes and, in particular, on his willingness to do so.

That the initial Department of Defense assumptions were unrealistically low in order to make the flexible options doctrine more palatable for the public has been recently underscored by the Department itself. In another revision of the first estimates, the Pentagon has recently admitted that a "selective nuclear strike" at the ICBMs might cause from 3.5 to 22 million casualties.[84] The revised figures have allegedly been obtained by assuming that the Soviets chose to burst their weapons on the surface instead of at an optimum height. Yet, some of the earlier discrepancies remain. For example, the Pentagon calculations are still based strictly on selective attacks on strategic weapons systems. It is fair to assume that just as the U.S. targeting includes soft targets, these are also included in Soviet planning. Therefore, in a hypothetical nuclear attack, instead of pounding on concrete-wrapped ICBM silos in North Dakota, the Soviets might hit an important civilian airport, an army barrack, a few crucial bridges, or some soft command and control facilities on the Eastern seaboard. If they chose to use their weapons in that fashion, casualties would obviously be still higher.

In conclusion, there is little evidence to support the assertion that deterrence will be enhanced by a threat to execute a flexible options strike. To make the strike credible

collateral damage should be kept extremely low. All available evidence suggests that under most circumstances the number of casualties would be unbearably high, and, therefore, dangers of escalation would lurk close.

3. Escalation Control

Let us assume, however, that flexible options strikes have been launched. Does the availability of flexibility help to keep war within limits? In general, can nuclear wars be conducted as calculated exercises of "will and purpose," or will they inevitably turn into orgies of pure violence? These questions address our third criterion, that of escalation control.

Advocates of flexible options clearly believe that a selective use of nuclear weapons will restrict not only the level but also the extent of violence, that it is possible to have an exchange of a few warheads without major escalation. Schlesinger's arguments are worth quoting at length:

> If we were to maintain continued communications with the Soviet leaders during the war, and if we were to describe precisely and meticulously the limited nature of our actions, including the desire to avoid attacking their urban industrial base, that in spite of what one says historically in advance that everything must go all out, when the existential circumstances arise, political leaders on both sides will be under powerful pressure to continue to be sensible.[85]

This is the epitome of conventional wisdom in post-war strategic thinking: cool, calculating actors communicating rationally with each other, able and willing to listen to reason, ready to bargain, capable of striking a mutually

happy compromise. A wealth of historical examples from the last three decades should tell us that signals are either lost or misunderstood, a bargain for one might look like selling out for another, and even fast friends have difficulties in understanding each other.[86] And furthermore, even if we were not to embrace the idea of a sacrosanct threshold between conventional ammunitions and nuclear weapons, we would still have to reconcile with the fact that an introduction of nuclear weapons does constitute a crucial break with the past. In quantitative terms, even a limited use of nuclear weapons is capable of inflicting a tremendous amount of damage on the opponent, and qualitatively, radiation effects in particular set nuclear weapons apart from conventional explosives.

An exchange of a few warheads, therefore, does not inescapably need to lead to a loosening of all restraints, but it does open up a Pandora's box. Can the rationality and coolheadedness of decision-makers on both sides--on which Schlesinger puts so high a premium--be taken for granted? Is there any way to measure how much collateral damage is "acceptable" to the opponent? How can we be sure that our adversary has the capability of monitoring and interpreting an attack as a limited one, and even more importantly, that he chooses to interpret it as such? And finally, does he have both the capability and the willingness to actually get entangled in exchanging limited nuclear strikes, or does he expect nuclear wars to be large-scale under any circumstances?

There are no clear and easy answers to any of these questions. But perhaps we should keep one simple guideline in mind: since both parties to a nuclear conflict have an interest in finding some limit, the firebreak should be kept as obvious as possible. A distinguished analyst has argued that "if two sides must strike a 'bargain' without explicit communication, the particular limit has to have some quality that distinguishes it from the continuum of possible alternatives; otherwise there is little basis for the confidence of each side that the other acknowledges the same limit."[87] It is not obvious that a "limited, flexible use" of nuclear weapons can be readily distinguished from more large-scale attacks. What kinds of targets are we allowed to hit, how many targets destroyed would still fall within limited war, how much collateral damage would be permissible? To insist that the use of nuclear weapons can be as readily limited at, say, fifty as at zero, or that "Hitler could have used just a little gas,"[88] is in fact blurring one very important distinction. The distinction between conventional and nuclear weapons is clearer than the distinction between flexible options strikes and attacks on cities, so in order to find a mutual recognition of limits, that distinction should be strengthened rather than undermined. We conclude, therefore, that although flexible strikes need not irrevocably lead to escalation, they do introduce an element of uncertainty and unpredictabality to military calculations that makes escalation more probable,

and that is one more reason to refrain from employing the flexible options strategy.

IV. CONCLUSION

The tenor of this paper has been critical. On balance, we should recognize that the flexible options strategy does offer several advantages. If either the U.S. or her allies have been attacked with nuclear weapons or are about to be subjected to nuclear blackmail, it is desirable for the U.S. to have flexibility in targeting plans. But it should be emphasized that this can be obtained by a wider range of choices and options in the SIOP, without improvements in weapons systems themselves. Availability of flexible options may also have a sobering effect in other potential crisis situations. If both superpowers have a tacit understanding that one nuclear explosion does not necessarily imply unrestrained spasms of retaliation, the classical scenarios for an outbreak of strategic nuclear war--accidents, mechanical failures, leaders gone beserk--cease to appear disastrous.

However, negative aspects of the strategy seem to override the positive ones. A nuclear attack in cold blood on the U.S. or her allies is a very unlikely possibility--and in this most of the supporters of flexible options would readily concur. A more likely one is a conventional probe to an area where vital U.S. interests are seen to be at stake. Our analysis strongly suggests that under this circumstance flexible options fail to enhance deterrence. The

deterrent effect depends on the credibility of the promise to stop a conventional attack by using or threatening to use extremely accurate nuclear strikes. Yet, the deterror is placed in a curious dilemma: few might be too few and many too many. Is there an alternative to rattling nuclear sabers? One escape from the dilemma is to create a conventional local deterrent. For many, this solution conjures up images of soaring defense expenditures and U.S. servicemen swarming in other continents. It has been long argued, however, that better planning and coordination alone among the Western allies would build up an adequate NATO muscle.[89] This argument is now greatly strengthened by the future prospects of precision-guided munitions (PGM) for Western strategy.[90] The conventional option would not only enforce local deterrence, but it would be a sensible alternative to drawing retaliatory nuclear strikes on the U.S. population.

We should also recognize that the introduction of flexible options fails to solve many of the fundamental uncertainties underlying the concept of strategic deterrence. First, added flexibility and increased control over the weapons by themselves are commendable, but flexibility in combination with pinpoint accuracies and higher yields does raise the specter of first-strike, no matter how many times we try to deny it. Secondly, we should not numb our senses to the gruesome consequences resulting from even limited nuclear strikes. The availability of flexible options does

not free the decision-maker of a cruel bind: what are the conditions under which the deployment of nuclear weapons should be ordered? Even in a situation where the targets are far from population centers, casualties will be high; it will be hard to agree on rules of reciprocity; and the dangers of escalation will always be present. While the assured destruction doctrine appears to imprison the decision-maker in a predetermined course of action, even flexible options fail to remove the agonies of decision-making. Finally, it should be emphasized that the flexible options doctrine does not offer a solution to the dilemma of morality in the current theory of nuclear deterrence. The ultimate deterrence threat still remains in the ability to hurt hostage civilian populations, and a limited deployment of weapons fails to change that grisly fact.

Footnotes

1. The remarks that reopened the issue of counterforce targeting were contained in President Nixon's annual report to the Congress in 1970: "Should a President, in the event of a nuclear attack, be left with the single option of ordering the mass destruction of enemy civilians, in the face of the certainty that it would be followed by the mass slaughter of Americans? Should the concept of assured destruction be narrowly defined and should it be the only measure of our ability to deter the variety of threats we may face?"
Richard M. Nixon, A Report to the Congress, U.S. Foreign Policy for the 1970's, A New Strategy for Peace, (February 18, 1970), p. 122.

The academic debate was initiated by the Iklé-Pakofsky exchange in Foreign Affairs. See Fred C. Iklé, "Can Nuclear Deterrence Last Out the Century?," Foreign Affairs, Vol. 51, No. 2, (January 1973), pp. 267-85 and Wolfgang K.H. Panofsky, "The Mutual-Hostage Relationship Between America and Russia," Foreign Affairs, Vol. 52, No. 1, (October 1973), pp. 109-18. Other contributions include Herbert Scoville, Jr., "Flexible Madness?," Foreign Policy, No. 14, (Spring 1974), pp. 164-77, Ted Greenwood and Michael L. Nacht. "The New Nuclear Debate: Sense or Nonsense?," Foreign Affairs, Vol. 52, No. 4, (July 1974), pp. 761-80, and Richard Rosecrance, Strategic Deterrence Reconsidered, Adelphi Papers, No. 116, The International Institute for Strategic Studies, London, (Spring 1975).

2. Notable exceptions are Barry E. Carter, "Nuclear Strategy and Nuclear Weapons," Scientific American, Vol. 230, No. 5, (May 1974), pp. 20-31 and Lynn Etheridge Davis, Limited Nuclear Options: Deterrence and the New American Doctrine, Adelphi Papers, No. 121, The International Institute for Strategic Studies, London, (Winter 1975-76).

3. George H. Quester, "SALT III and Potential nth Countries," in Robert L. Pfaltzgraff, Jr. (ed.), Contrasting Approaches to Strategic Arms Control, D.C. Heath and Co., Lexington, Mass., (1974), pp. 249-71.

4. For a succinct exposition of the doctrine, see Secretary of Defense Robert McNamara, Annual Defense Department Report FY 1966.

5. Secretary of Defense James R. Schlesinger, Annual Defense Department Report FY 1975, Part II, p. 38.

6. Ibid.

7. For a representative argument, see Arthur Lee Burns, Ethics and Deterrence: A Nuclear Balance Without Hostage Cities?, Adelphi Papers, No. 69, The International Institute for Strategic Studies, London, (July 1970).

8. For example, Stephen Maxwell, Rationality in Deterrence, Adelphi Papers, No. 50, The International Institute for Strategic Studies, London, (August 1968) or Alexander George and Richard Smoke, Deterrence in American Foreign Policy, Columbia University Press, New York, (1974).

9. Commencement Address, Secretary of Defense Robert McNamara, Ann Arbor, Mich., (June 16, 1962). Reprinted in The Department of State Bulletin, XLVII, (July 9, 1962), pp. 64-9.

10. Richard M. Nixon, Report to the Congress, U.S. Foreign Policy for the 1970's: A New Strategy for Peace, (Feb. 18, 1970).

11. For example, see Michael May, "Some Advantages of a Counterforce Deterrence," Orbis, Vol. XIV, No. 2, (Summer 1970), pp. 271-83, and
Bruce M. Russett, "Assured Destruction of What? A Countercombatant Alternative to Nuclear MADness," Public Policy, Vol. XXII, No. 2, (Spring 1974), pp. 121-38.

12. Fred C. Iklé, "Can Nuclear Deterrence Last Out the Century?," Foreign Affairs, Vol. 51, No. 2, (Jan. 1973), p. 282.

13. James R. Schlesinger, remarks made before the Overseas Writers Association Luncheon, Washington, D.C. (Jan. 10, 1974). Relevant excerpts from his address are reprinted in "Flexible Strategic Options and Deterrence," Survival, Vol. XVI, No. 2, (March/April 1974), pp. 86-90.

14. Ibid.

15. See, for example, Wolfgang K.H. Panofsky, "The Mutual-Hostage Relationship Between America and Russia," Foreign Affairs, Vol. 52, No. 1, (Oct. 1973), p. 115 or Milton Leitenberg, "The Race to Oblivion: The Superpowers Talk Peace While Preparing for War," The Bulletin of the Atomic Scientists, Vol. XXX, No. 7, (Sept. 1974), p. 10.

16. That Soviet population is highly concentrated and thus vulnerable to nuclear attacks is underlined by the fact that the top 100 cities contain as much as 24.8% of the population (59.8 million people) and about 50% of the nation's industrial capacity. For full documentation of this information, see Geoffrey Kemp, Nuclear Forces for Medium Powers, Part I: Targets and Weapons Systems, Adelphi Papers, No. 106, The International Institute for Strategic Studies, London, (Autumn 1974), pp. 5-13.

17. In 1967 Secretary McNamara testified: "It seems reasonable to assume that in the case of the Soviet Union, the destruction of, say, one-fifth to one-fourth of its population and one-half to two-thirds of its industrial capacity would mean its elimination as a major power for many years." The Fiscal Year 1968-72 Defense Program and 1968 Defense Budget, Statement of

Secretary of Defense Robert McNamara Before a Joint Session of the Senate Armed Services Committee and the Senate Subcommittee on Department of Defense Appropriations, (Jan. 23, 1967), p. 39.

18. Megaton-equivalents (MTE) should not be confused with actual megatonnage of the weapons. Because a certain amount of energy of particularly higher yield warheads will be "wasted," an adjustment has to be made in calculations. The MTE of any weapon can be calculated by using the following formula:

$$MTE = NY^{2/3}$$

where N is the number of warheads and Y is the yield of each individual warhead.

For further details, see Kemp, op. cit., p. 26 and Alton H. Quanbeck and Barry M. Blechman, Strategic Forces: Issues for the Mid-Seventies, The Brookings Institution, Washington, D.C., (1973).

The figure 400 MTE reflects the calculation that after a point the marginal gains of employing additional weapons would diminish. This can be clearly seen from Table 1:

Table 1: Soviet Population and Industrial Capacity Destroyed

	Total Population Killed		Industrial Capacity Destroyed
MTE Delivered	millions	%	%
100	37	15	59
200	52	21	72
400	74	30	76
800	96	39	77
1,200	109	44	77
1,600	116	47	77

Source: Alain C. Enthoven and K. Wayne Smith, How Much Is Enough? Shaping the Defense Program, 1961-69, Harper and Row, New York, 1971, p. 207.

19. Table 2: U.S. Strategic Weapons

Category	Type	Number	No. of Warheads	Yield
land-based ICBMs	Titan II	54	1	5-10 MT
	Minuteman II	450	3 MRV	1-2 MT
	Minuteman III	550	3 MIRV	170 KT

Category	Type	Number	No. of Warheads	Yield
SLBMs	Polaris A3	256	3 MRV	200 KT
	Poseidon	400	10-14 MIRV	50 KT
Bombers	B-52	432	varies	megaton-range

The MTEs of each of the weapon systems can be easily calculated by using the formula given in the previous footnote. The information in the table is derived from The Military Balance 1975-76. The International Institute for Strategic Studies, (London 1975), p. 3 and pp. 71-2. For the McNamara figures, see Barry Carter, loc. cit., p. 24.

20. It may be argued that additional warheads are needed for targets in China as well as for those in Eastern Europe, and that missile malfunctioning and operational unreliability have to be compensated for by double-targeting. Furthermore, all missiles are not available for use at all times. Even with these allowances made, it is maintained that the U.S. will have more than 4000 warheads left over for counterforce targeting. See, SIPRI Yearbook 1974, Almqvist and Wiksell, International, (Stockholm 1973), p. 59. Due to subsequent MIRVing of more Minuteman missiles, the SIPRI estimate seems to be even too low for today.

21. An excellent discussion on the development of U.S. strategic targeting is provided by Desmond Ball, Déja Vu: The Return to Counterforce in the Nixon Administration, California Seminar on Arms Control and Foreign Policy, Foreign Scholar Series, (December 1974). See also Leitenberg, loc. cit.

22. U.S.-U.S.S.R. Strategic Policies, Hearing before the Subcommittee on Arms Control, International Law and Organization of the Committee on Foreign Relations, United States Senate, 93rd Congress, Second Session, (March 4, 1974), p. 8. Hereafter cited as U.S.-U.S.S.R. Strategic Policies.

23. Secretary of Defense, Annual Defense Department Report FY 1975, Part II, p. 33. During the testimony referred to in the previous footnote, Schlesinger had the following exchange with Senator Muskie:

> Senator Muskie. I think this point we have already discussed: it is the question of whether the United States has maintained a substantial counterforce capability for many years. "Only a small fraction of the more than 25,000 targets contained in the strategic targeting plan are cities. The majority of

these targets include a wide range of military objectives such as Soviet bomber bases and some missile silos. Greater flexibility in weapons systems appears attainable only by developing an efficient counterforce capability."

Secretary Schlesinger. I think the latter part of that statement is wrong. The selectivity comes from the doctrinal planning and command and control arrangements.

The other part of the statement is correct. We have been targeting against other than cities, but not in the selective and flexible manner that I have indicated.

(U.S.-U.S.S.R. Strategic Policies, p. 38).

24. For a detailed discussion, see Ball, op. cit., pp. 10-18.

25. This information is based on interviews by the author in the U.S. Departments of State and Defense, Washington, D.C. (May 1975).

26. Schlesinger has stressed that "one should think through the problems in advance and put together relevant, small packages which a President could choose under the circumstances in which they might be required." Therefore, "what the change in targeting doctrine does is give the President of the United States... the option of limiting strikes down to a few weapons." Both quotes are from U.S.-U.S.S.R. Strategic Policies, p. 9.

27. See James R. Schlesinger, Secretary of Defense, The Theater Nuclear Force Posture in Europe. A Report to the U.S. Congress in Compliance with Public Law, pp. 93-365, (1975), especially Part C.

28. Secretary of Defense, Annual Defense Department Report FY 1975, Part II, p. 41.

29. Briefing on Counterforce Attacks, Hearing before the Subcommittee on Arms Control, International Law and Organization of the Committee on Foreign Relations, United States Senate, 93rd Congress, Second Session, (Sept. 11, 1974), p. 39. Hereafter cited as Briefing on Counterforce Attacks.

30. For a detailed argument emphasizing the importance of improved command, control, and communications, see Edgar Ulsamer, "C^3-Key to Flexible Deterrence," Air Force Magazine, Vol. 57, No. 7, pp. 44-51. To conduct the kind of limited strikes the flexible options policy calls for, excellent command and control will be imperative. According to Mr. Ulsamer, a "strategic command and control triad" is being developed, consisting of command, control, and communications

satellites, the Advanced Airborne Command Post [the E-4A aircraft, a modified Boeing 747, equipped with advanced command and control equipment to serve both the NEACEP (National Emergency Airborne Command Post) of the U.S. President and as SAC's new Flying Command Post], and the SANGUINE system for submarine communications (the SANGUINE uses extremely-low-frequency transmissions that penetrate seawater 20 times more efficiently than the currently used very-low-frequency system). The FY 1977 DoD funding for the satellite system was $39 million, for the Advanced Airborne Command Post $99 million, and for the SANGUINE ELF system $30 million. Secretary of Defense, Donald H. Rumsfeld, Annual Defense Department Report FY 1977, Part II, pp. 76-77.

31. Secretary of Defense James R. Schlesinger, Annual Defense Department Report FY 1976 and FY 1977, Part II, p. 26.

32. For an excellent discussion on improvements in accuracy, see Kosta Tsipis, "The Accuracy of Strategic Missiles," Scientific American, Vol. 233, No. 1, (July 1975), pp. 14-23.

33. The "fratricide" effect limits the number of warheads which can be deployed against a single target in rapid succession. The detonation of the first warhead may disable subsequent ones before the latter can hit the target. In addition to radiation disabling incoming warheads, crater debris, shock waves and nuclear clouds may reduce accuracy and penetration of subsequent warheads. Increased accuracy seems to provide the answer to this problem, for with more accurate warheads, fewer warheads need to be allocated to any single target. The issue of fratricide effects is discussed in Lt. Col. J.J. McGlinchey and Dr. Jacob W. Seelig, "Why ICBMs Can Survive a Nuclear Attack," Air Force Magazine, Vol. 57, No. 9, (Sept. 1974), pp. 82-5.

34. For an article on how the probability of kill calculations are done, see Lynn Etheridge Davis and Warner R. Schilling, "All You Ever Wanted to Know About MIRV and ICBM Calculations But Were Not Cleared to Ask," The Journal of Conflict Resolution, Vol. XVII, No. 2, (June 1973), pp. 207-42.

According to the article, a single shot kill probability can be calculated from the following formula:

$$SSKP = 1 - e^{\frac{-5.83\ Y^{2/3}}{H^{0.7}\ (CEP)^2}}, \text{ where}$$

H = hardness of the target in pounds per square inch
Y = yield of the attacking warhead in megatons
CEP = circular error probable in nautical miles

35. For further details, see Strategic Survey 1974, pp. 48-50 and Michael Nacht, "The Vladivostok Accord and American Technological Options," Survival, Vol. XVII, No. 3, (May/June 1975), pp. 106-13.

36. Secretary of Defense James R. Schlesinger, Annual Defense Department Report FY 1976 and FY 1977, Part II, p. 26.

37. Ibid.

38. General Maxwell D. Taylor, Chairman, Joint Chiefs of Staff, Nuclear Test Ban Treaty, Testimony before the Committee on Foreign Relations, United States Senate, 88th Congress, First Session, (Aug. 15. 1963), p. 274.

39. The quote is from the speech delivered by ERDA's Deputy Assistant Administrator for National Security, Maj. Gen. Edward B. Giller, USAF (Ret.), at the Air Force Association's Symposium on "Tomorrow's Strategic Options," held at Vandenberg AFB, California (April 28-29, 1976). Air Force Magazine, Vol. 59, No. 7, (July 1976), p. 85.

40. See, Ralph Lapp, Arms Beyond Doubt: The Tyranny of Weapons Technology, Cowles, (New York 1970).

41. James R. Kurth, "Why We Buy the Weapons We do," Foreign Policy, No. 11, (Summer 1973), pp. 33-56.

42. See, for example, Morton Halperin, "Why Bureaucrats Play Games," Foreign Policy, No. 2, (Spring 1971), pp. 70-90.

43. For an excellent analysis of the same features in the MIRV program, see Ted Greenwood, Making the MIRV: A Study of Defense Decision Making, Ballinger Publishing Company, Cambridge, Mass., (1975). I have also benefited from the discussion provided by Mr. John Mearsheimer, "An Analysis of Secretary of Defense James R. Schlesinger's Limited Counter-force Options Policy," unpublished paper, Cornell University.

44. Secretary of Defense Donald H. Rumsfeld, Annual Defense Department Report FY 1977, Part II, p. 81.

45. Secretary of Defense James R. Schlesinger, Annual Defense Department Report FY 1976 and FY 1977, Part II, p. 26.

46. Fiscal Year 1976 and July-September 1976 Transition Period Authorization for Military Procurement, Research and Development, and Active Duty, Selected Reserve and Civilian Personnel Strengths, Hearing before the Committee on Armed Services, United States Senate, 94th Congress, First Session. Secretary

of Air Force McLucas testified that "the average program unit cost for the B-1 bomber is estimated at $84 million a piece," p. 497, and Secretary of Navy Middendorf estimated the total cost for the 10 ship Trident program to be "about 15 billion," p. 736.

47. Graham T. Allison and Frederic A. Morris, "Armaments and Arms Control: Exploring the Determinants of Military Weapons," in Franklin A. Long and George W. Rathjens (eds.), Arms, Defense Policy and Arms Control, Norton, (New York 1976), pp. 118-121.
For a more detailed book-length study of MIRV, see Ted Greenwood, Making the MIRV: A Study of Defense Decision Making, Ballinger Publishing Company, Cambridge, (Mass. 1975).

48. James R. Schlesinger, remarks made before the Overseas Writers Association luncheon, Washington, D.C. (Jan. 10, 1974). For an interesting account on how accuracy gradually emerged as an important criterion for U.S. strategic forces, see Greenwood, op. cit., especially Chapter 2.

49. Tsipis, loc. cit.

50. In the 1950's and early 1960's the Navy saw general purpose forces as its operational "essence." Due to a blend of bureaucratic, technological, and even personal interests, the Navy in the late 1960's started to see the attractiveness of the strategic mission; the position that the Air Force had held since the Second World War. This collusion translated into increased pressures from both services for improved counterforce capabilities. For a detailed analysis, see Greenwood, op. cit., Chapter 3.

51. See Ball, op. cit., pp. 29-38 for a detailed analysis of the views of Nixon, Kissinger, and other high officials on flexible options and counterforce.

52. Despite the official appearance of a Pentagon consensus on flexible options, there apparently was considerable opposition to Schlesinger's ideas within the Department of Defense. This came clearly through in interviews conducted by the author, and the author's observations are corroborated by Lt. Gen. Daniel O. Graham, "Conventional Forces as Deterrent," Army, Vol. 26, No. 6, (June 1976), where he refers to those dissenting generals in the Pentagon who could not see the virtues of the Schlesinger doctrine.

53. For a view maintaining that McNamara feared flexible response for its possible exploitation by new weapons advocates, and saw assured destruction as a handy budgetary and managerial tool, see William W. Kaufman, The McNamara Strategy, Harper and Row, (New York 1964).

54. Bruce M. Russett offers a similar list in loc. cit., His criteria are the following: "1. If the proposal were implemented, would it offer prospects that war would be less destructive, or at least not more destructive, than if the proposal were not implemented? 2. Does the proposal offer prospects that war would be less likely, or at least not more likely, than if it were not implemented? 3. Is the proposal consistent with arms race stability; that is, does it imply less, or at least not additional, armament expenditure?" Our list differs from his for two reasons. First, our discussion has already shown that flexible options policy does not fulfill Russett's third criterion; and secondly, we feel that in the case of limited employment of weapons, such as flexible options policy, it is crucial to understand what impact that policy has on the prospects for escalation control.

55. Lynn Etheridge Davis, in op. cit., p. 1, describes the term "employment policy" in the following way: "Employment policy describes the targets and how the United States plans to use the nuclear weapons which it possesses today."

56. See, for example, Panofsky, loc. cit.

57. See, for example, Scoville, loc. cit., p. 177.

58. Secretary of Defense James R. Schlesinger, Annual Defense Department Report FY 1975, Part II, p. 40.

59. Ibid.

60. Secretary of Defense Donald H. Rumsfeld, Annual Defense Department Report FY 1977, Part II, p. 57.

61. For arguments elaborating on the contingencies, see Schlesinger, Annual Defense Department Report FY 1975, Part II, pp. 35-42.

62. Briefing on Counterforce Attacks, p. 9. According to Schlesinger, a limited capability by the United States would improve deterrence: "If the United States possesses the ability to respond in kind, then the Soviet planner is faced with the prospect that the United States would respond and leave him a no gain situation and, therefore, he would continue to be deterred." Ibid.

63. For Secretary Schlesinger's reference to Europe, see U.S.-U.S.S.R. Strategic Policies, p. 12, and Briefing on Counterforce Attacks, pp. 41-42.

64. This is the well-known definition of Glenn H. Snyder, Deterrence and Defense: Toward a Theory of National Security, (Princeton 1961), p. 12.

65. For further elaboration, see Rosecrance, op. cit., p. 3.

66. My analysis follows the seminal paper by Daniel Ellsberg, "The Crude Analysis of Strategic Choices," RAND Corporation P-2183, (1960). The paper is reproduced in Martin Schubik (ed.), Game Theory and Related Approaches to Social Behavior, John Wiley and Sons, (New York 1964).

67. For an excellent analysis on how deterrence can be manipulated, see Thomas C. Schelling, Arms and Influence, Yale University Press, (New Haven 1966).

68. Secretary of Defense James R. Schlesinger, Annual Defense Department Report FY 1975, Part II, p. 38.

69. U.S.-U.S.S.R. Strategic Policies, pp. 12-13.

70. Rosecrance, op. cit., p. 17.

71. Davis, op. cit., p. 15 (emphasis in the original).

72. Brig. Gen. Lynn D. Smith, "Our Neglected Civil Defenses," Army, Vol. 26, No. 7, (July 1976), pp. 12-20.

73. In 1970, 73.5% of the U.S. population was classified as urban. Out of the total population of 203 million, 50% of the people were living in 16% of the total land area. Statistical Abstract of the United States 1975, U.S. Department of Commerce, Bureau of the Census, (1975). Secretary Schlesinger has pointed out that "American cities are more spread out than Soviet cities and this tends to counteract the higher degree of urbanization. But, by and large, there is a somewhat higher relative vulnerability of the American population." Briefing on Counterforce Attacks, p. 21.

74. Briefing on Counterforce Attacks, p. 10.

75. For a detailed account of Soviet civil defense organization and objectives, see Harriet Fast Scott, "Civil Defense in the U.S.S.R.," Air Force Magazine, Vol. 58, No. 10, (Oct. 1975), pp. 29-33. See also Paul H. Nitze, "Assuring Strategic Stability in an Era of Detence," Foreign Affairs, Vol. 54, No. 2, (Jan. 1976), pp. 211-12.

76. Secretary of Defense Donald H. Rumsfeld, Annual Defense Department Report FY 1977, Part II, p. 17.

77. Richard Fryklund, 100 Million Lives, Macmillan, (New York 1962).

78. U.S.-U.S.S.R. Strategic Policies, p. 19.

79. For critical arguments, see, for example Panofsky, loc. cit., or Scoville, loc. cit.

80. For detailed discussion on weapons effects, see Samuel Glasstone (ed.), The Effects of Nuclear Weapons, United States Atomic Energy Commission, (Washington, D.C. 1962).

81. Briefing on Counterforce Attacks, p. 12.

82. Ibid., pp. 30-2.

83. Ibid., p. 31. The "light" attack consisted only of two 1-megaton warheads fired at three Minuteman silos in the Whiteman complex (six warheads in total), and it was assumed that the attacker chose to use the most favorable wind pattern (i.e. the winds were blowing away from Kansas City), and that population was under cover. That Secretary Schlesinger was fully aware of the difficulties involved in keeping casualties down is clear from his reply to Senator Symington's inquiry concerning the level of collateral damage: "This is not a strategy without risk, I am not even hinting in that direction. What I am saying is that the risks involved here are far less than the risks involved were one to implement the pure Hiroshima strategy." U.S.-U.S.S.R. Strategic Policies, p. 28.

84. For the new Pentagon estimates, see The New York Times, (Sept. 17, 1975), p. 5.

85. U.S.-U.S.S.R. Strategic Policies, p. 13.

86. For historical data, see Alexander L. George and Richard Smoke, Deterrence in American Foreign Policy: Theory and Practice, Columbia University Press, (New York 1974).

87. Thomas C. Schelling, The Strategy of Conflict, Harvard University Press, Cambridge, (Mass. 1960), p. 262.

88. Thomas C. Schelling, Arms and Influence, Yale University Press, (New Haven 1966), p. 159.

89. This argument is elaborated e.g. in Alain C. Enthoven and K. Wayne Smith, How Much Is Enough? Shaping the Defense Program 1961-1969, Harper and Row, (New York 1971), R.W. Komer, "Treating NATO's Self-Inflicted Wound," Foreign Policy, No. 13, (Winter 1973-74), Alain C. Enthoven, "U.S. Forces in Europe: How Many? Doing What?," Vol. 53, No. 3, (April 1975), pp. 513-32, and Steven L. Canby, "Damping Nuclear Counterforce Incentives: Correcting NATO's Inferiority in Conventional Military Strength," Orbis, Vol. XIX, No. 1, (Spring 1975), pp. 47-71.

90. It has been argued that instead of relying on tactical nuclear weapons or flexible strategic options, a conventional

Soviet attack could be easily thwarted by the use of precision-guided weapons. This would not only be effective, but the escalation problems would be less severe. For one of the first and most provocative arguments, see Col. Edward B. Atkeson, "Is the Soviet Army Obsolete?" Army, Vol. 24, No. 5, (May 1974), pp. 10-16. See also Albert Wohlstetter, "Threats and Promises of Peace: Europe and America in the New Era," Orbis, Vol. XVII, Vol. 4, (Winter 1974), pp. 1107-1144, and James Digby, Precision-Guided Weapons, No. 118, Adelphi Papers, The International Institute for Strategic Studies, (London, Summer 1975).

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